FIG. 1

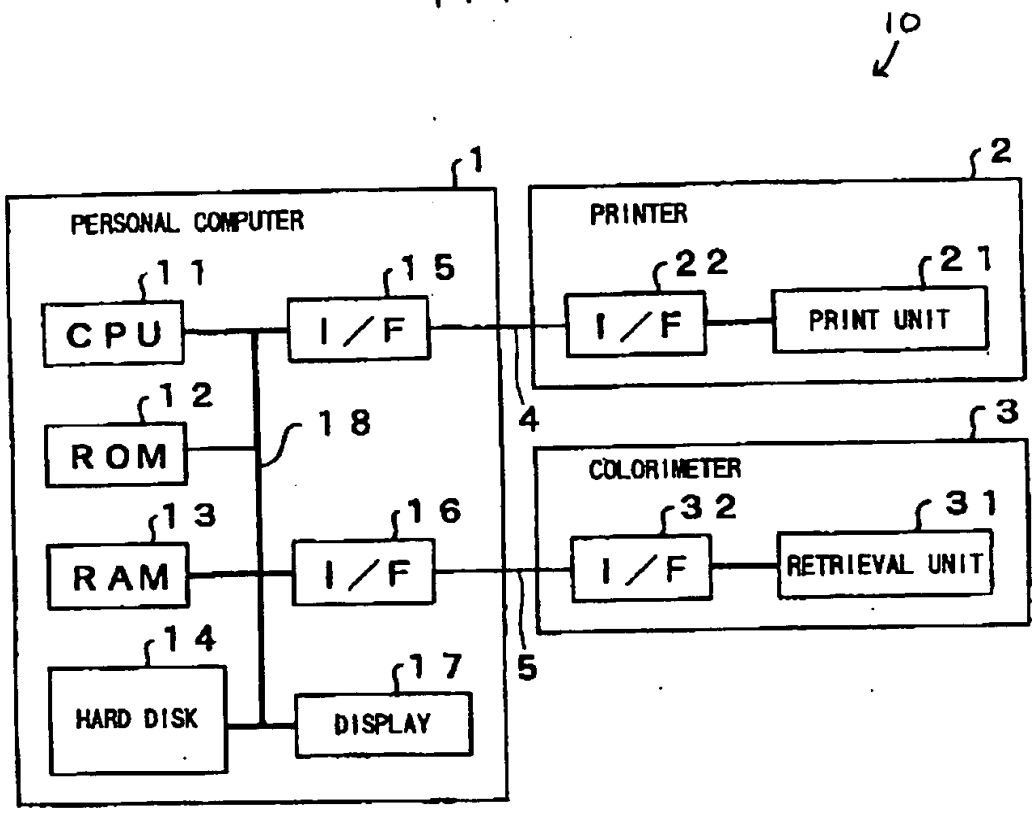


FIG. 2(a)

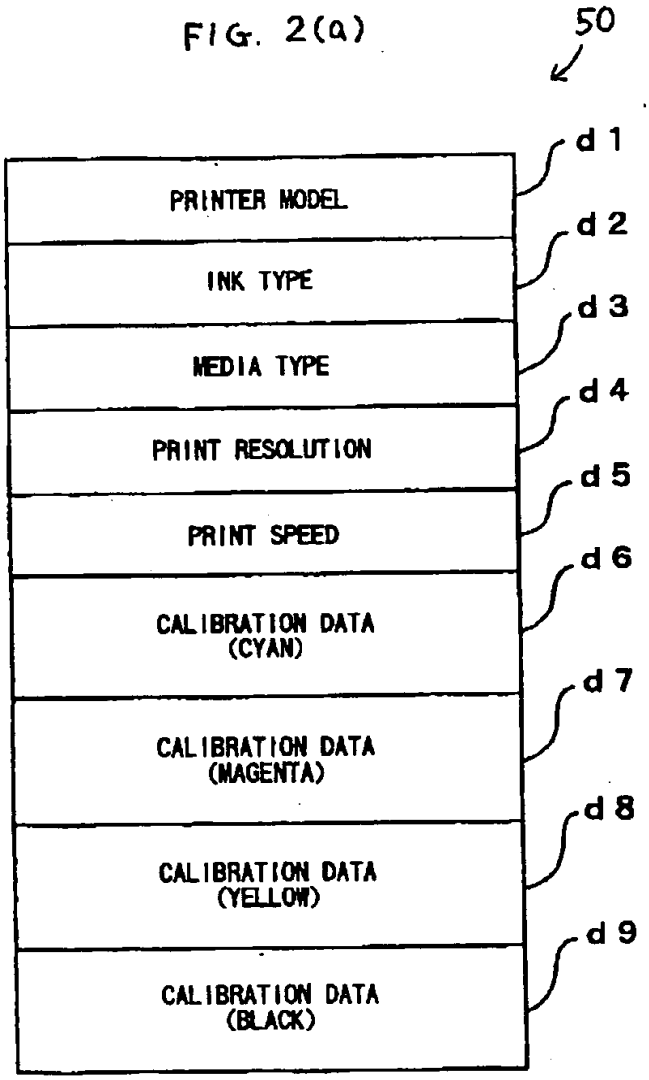

50
PRINTER MODEL
INK TYPE
MEDIA TYPE
PRINT RESOLUTION
PRINT SPEED
CALIBRATION DATA (CYAN)
CALIBRATION DATA (MAGENTA)
CALIBRATION DATA (YELLOW)
CALIBRATION DATA (BLACK)
d1
d2
d3
d4
d5
d6
d7
d8
d9

FIG. 2(b)

CALIBRATION DATA d6	
ORIGINAL LEVELS $C_{original}$	INPUT LEVELS Cin
0	⋮
∫	⋮
255	⋮

CALIBRATION DATA d7	
ORIGINAL LEVELS $M_{original}$	INPUT LEVELS Min
0	⋮
∫	⋮
255	⋮

CALIBRATION DATA d8	
ORIGINAL LEVELS $Y_{original}$	INPUT LEVELS Yin
0	⋮
∫	⋮
255	⋮

CALIBRATION DATA d9	
ORIGINAL LEVELS $K_{original}$	INPUT LEVELS Kin
0	⋮
∫	⋮
255	⋮

FIG. 3(a)

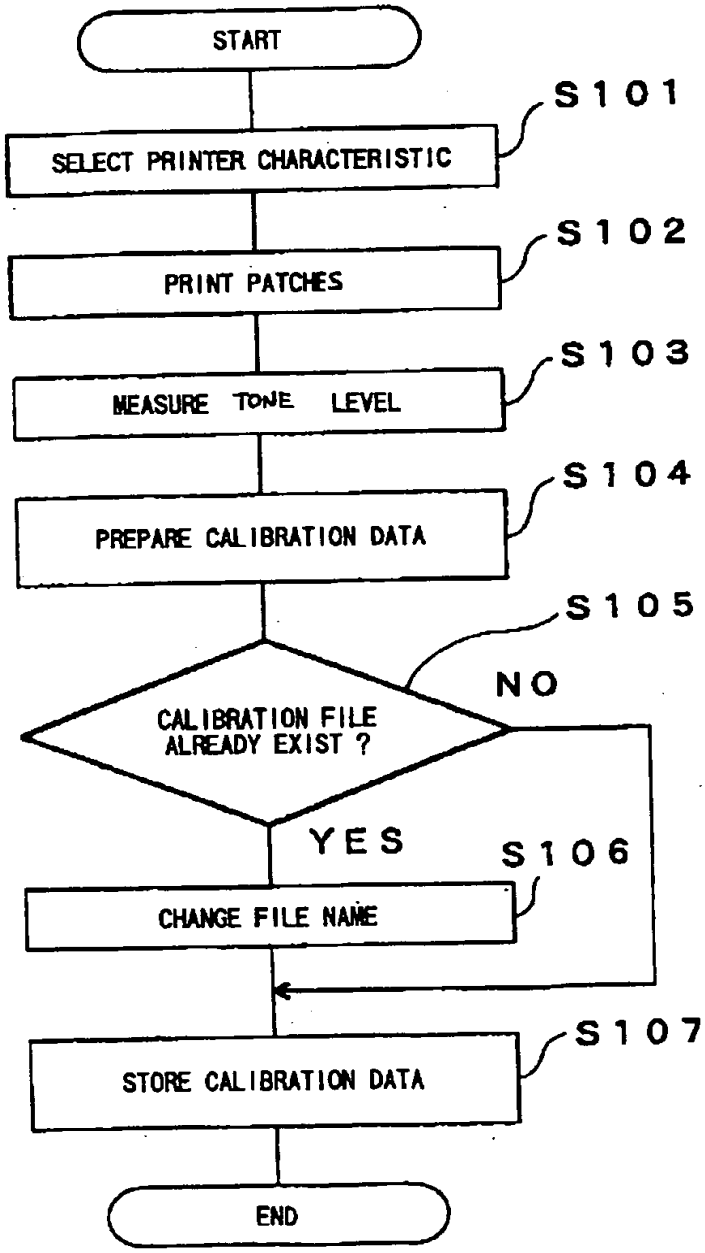

START
S101
SELECT PRINTER CHARACTERISTIC
S102
PRINT PATCHES
S103
MEASURE TONE LEVEL
S104
PREPARE CALIBRATION DATA
S105
CALIBRATION FILE ALREADY EXIST ?
NO
YES
S106
CHANGE FILE NAME
S107
STORE CALIBRATION DATA
END

FIG. 3(b)

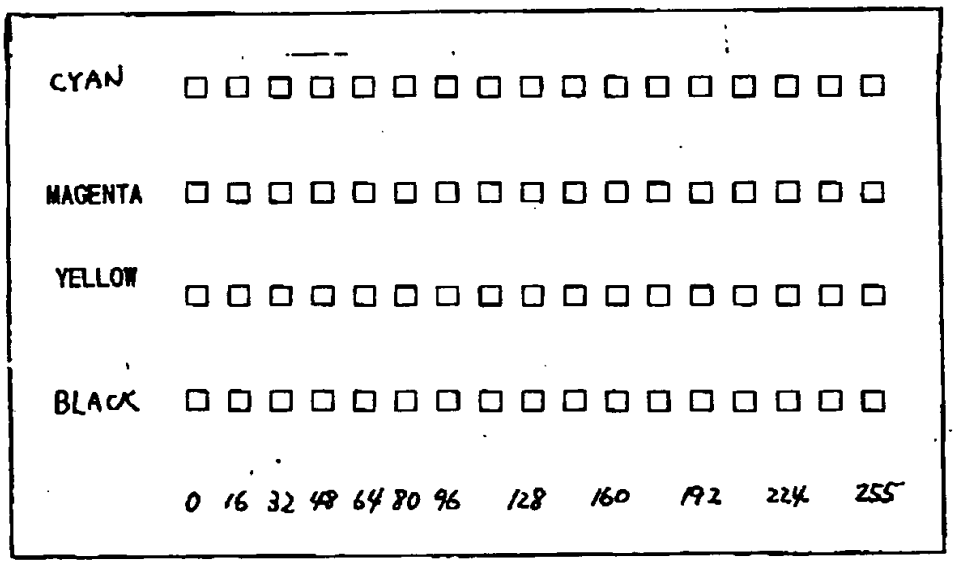
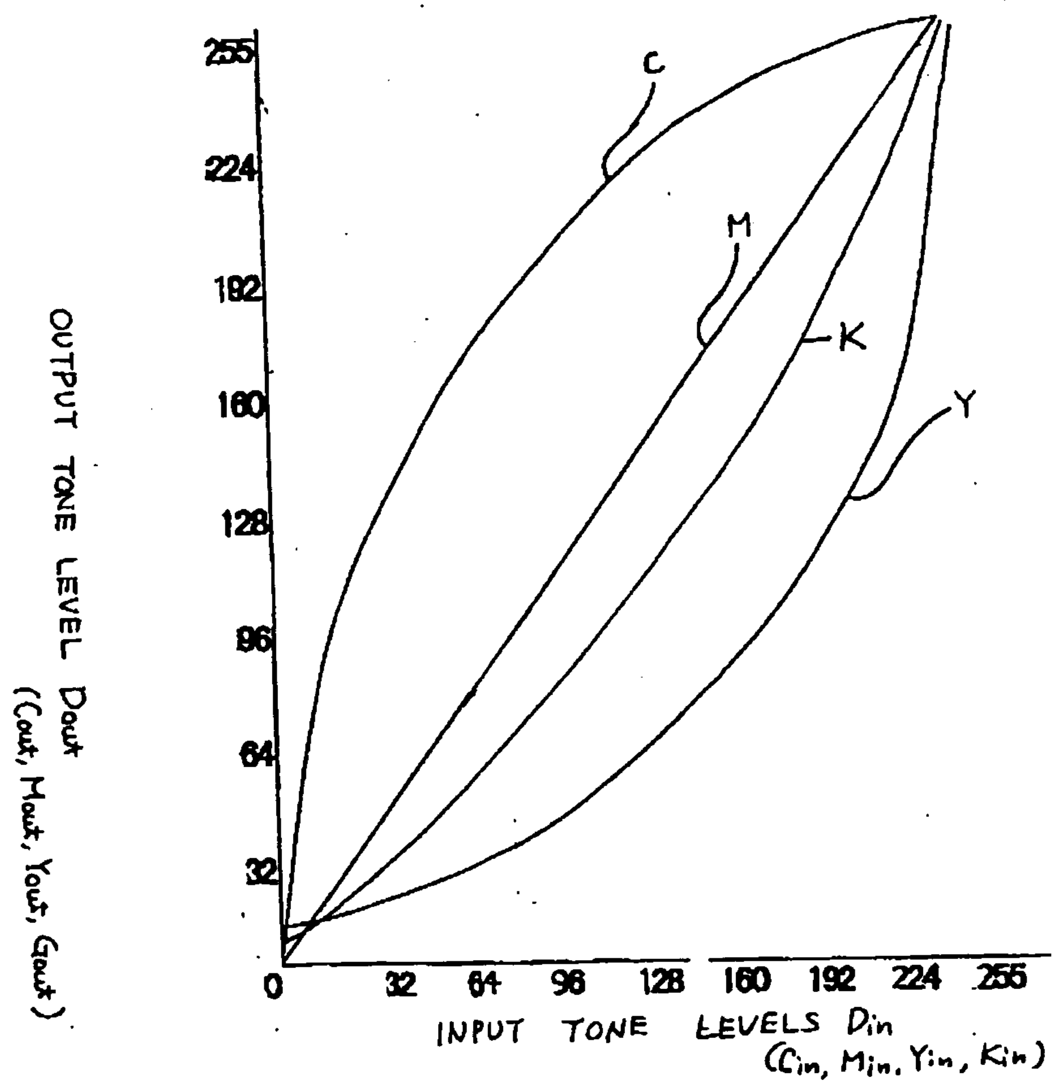

CYAN
MAGENTA
YELLOW
BLACK
0 16 32 48 64 80 96 128 160 192 224 255

FIG. 3 (c)



Din—Dout RELATIONSHIP

FIG. 4

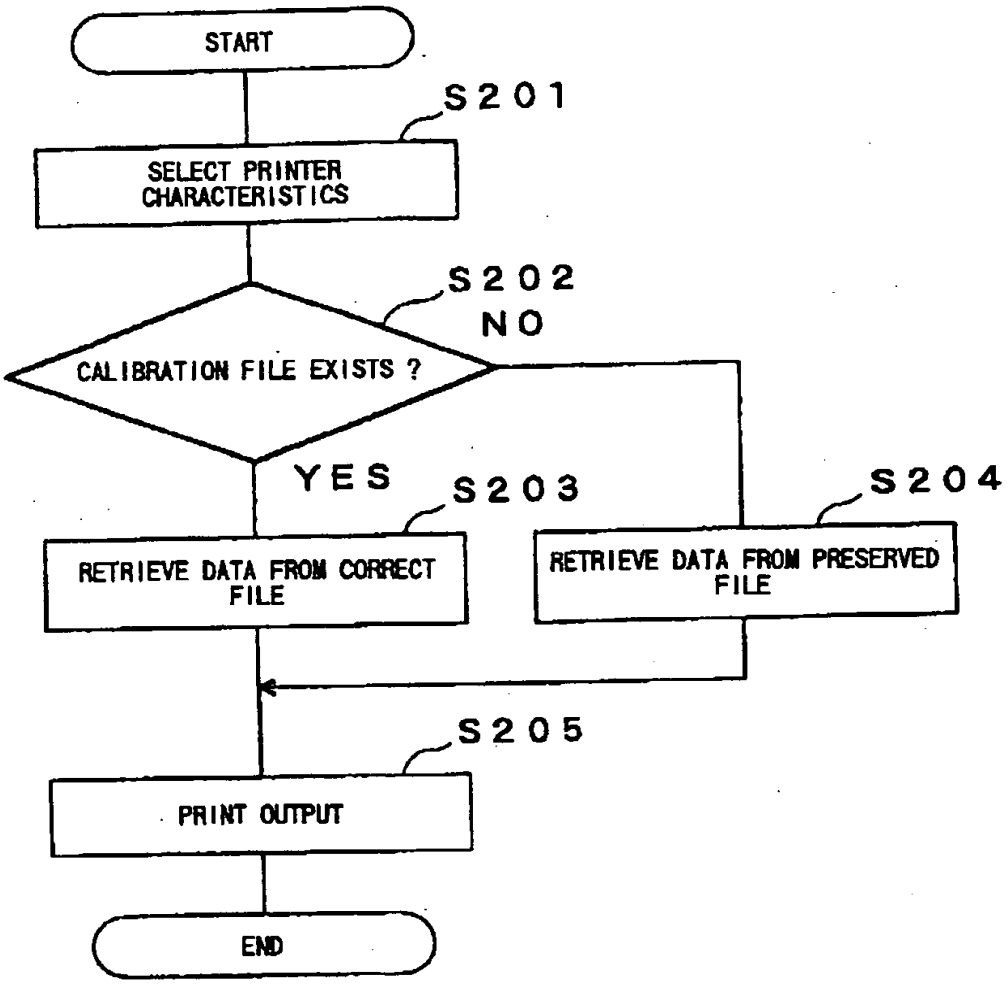

START
S201
SELECT PRINTER CHARACTERISTICS
S202
NO
CALIBRATION FILE EXISTS ?
YES
S203
RETRIEVE DATA FROM CORRECT FILE
S204
RETRIEVE DATA FROM PRESERVED FILE
S205
PRINT OUTPUT
END

FIG. 5

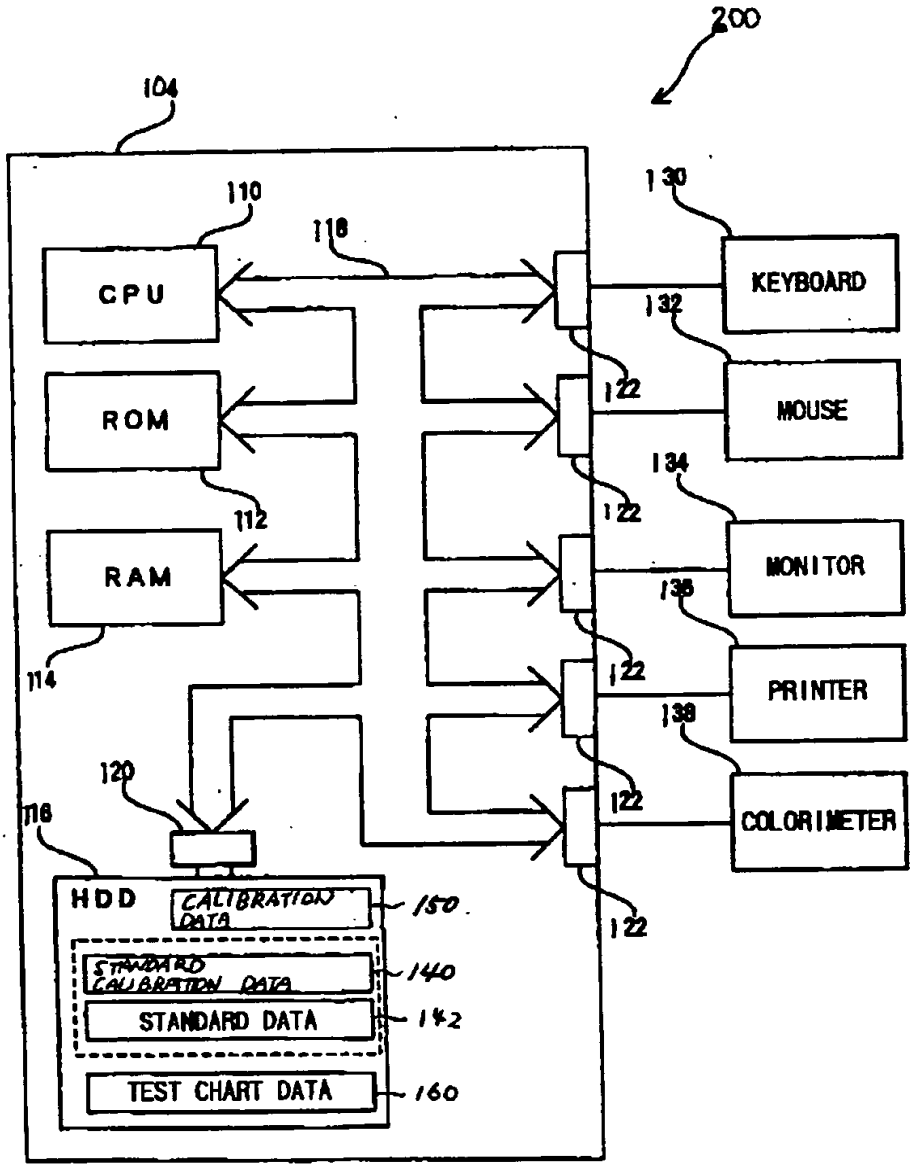

200
104
110
118
130
CPU
KEYBOARD
132
122
ROM
MOUSE
134
122
112
RAM
MONITOR
136
122
114
PRINTER
138
120
122
116
COLORIMETER
HDD
CALIBRATION DATA
150
STANDARD CALIBRATION DATA
140
STANDARD DATA
142
TEST CHART DATA
160

FIG. 6(a)

160

PATCH NUMBER	NUMERICAL VALUES Rin (red)	COLORIMETER 1	COLORIMETER 2	. . .
P1	0	$x1, y1$	$x1, y1$	. . .
⋮	⟆	⟆	⟆	. . .
P(n/3)	255	$x^{n/3}, y^{n/3}$	$x^{n/3}, y^{n/3}$	. . .
PATCH NUMBER	NUMERICAL VALUES Gin (green)			
P(n/3 + 1)	0	$x^{n/3+1}, y^{n/3+1}$	$x^{n/3+1}, y^{n/3+1}$	. . .
⋮	⟆	⟆	⟆	. . .
P(2n/3)	255	$x^{2n/3}, y^{2n/3}$	$x^{2n/3}, y^{2n/3}$	. . .
PATCH NUMBER	NUMERICAL VALUES Bin (blue)			
P(2n/3 + 1)	0	$x^{2n/3+1}, y^{2n/3+1}$	$x^{2n/3+1}, y^{2n/3+1}$	. . .
⋮	⟆	⟆	⟆	. . .
P(n)	255	$x3n, y3n$	$x3n, y3n$	. . .

FIG. 6(b)

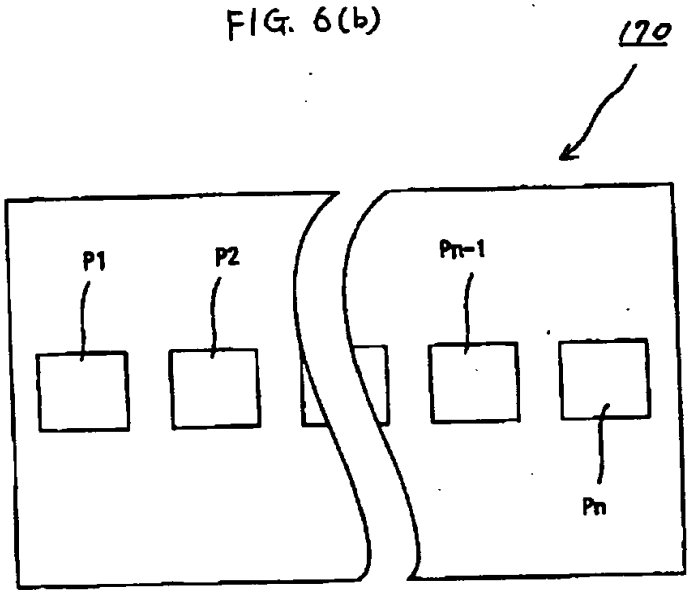


FIG. 7(a)

142

STANDARD DATA (1)	$(L^{*'}, a^{*'}, b^{*'})$	STANDARD CALIBRATION DATA REFERENCE NO.(1)
STANDARD DATA (2)	$(L^{*''}, a^{*''}, b^{*''})$	STANDARD CALIBRATION DATA REFERENCE NO.(2)
STANDARD DATA (3)	$(L^{*'''}, a^{*'''}, b^{*'''})$	STANDARD CALIBRATION DATA REFERENCE NO.(3)
⋮	⋮	

FIG. 7(b)

STANDARD DATA (1) (142)

PATCH NO.	P1	P2	. . .	Pn−1	Pn
PATCH COORDINATES (x, y) FOR COLORIMETER (1)	x1,y1	x2,y2		xn−1,yn−1	xn,yn
L^{*}	L'1	L'2		L'n−1	L'n
a^{*}	a'1	a'2		a'n−1	a'n
b^{*}	b'1	b'2		b'n−1	b'n

FIG. 7(c)

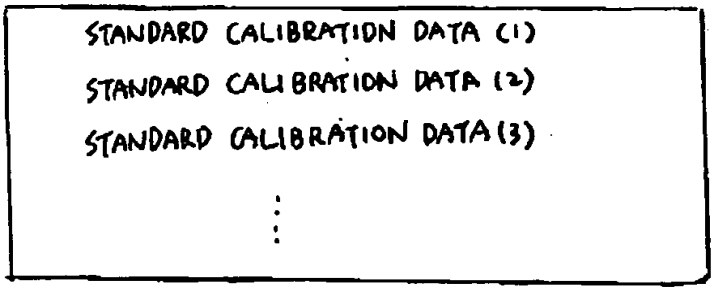


FIG. 7(d)

140

CALIBRATION DATA	
ORIGINAL LEVELS $R_{original}$	INPUT LEVELS Rin
0	
⋮	⋮
255	
CALIBRATION DATA	
ORIGINAL LEVELS $G_{original}$	INPUT LEVELS Gin
0	
⋮	⋮
255	
CALIBRATION DATA	
ORIGINAL LEVELS $B_{original}$	INPUT LEVELS Bin
0	
⋮	⋮
255	

FIG. 8

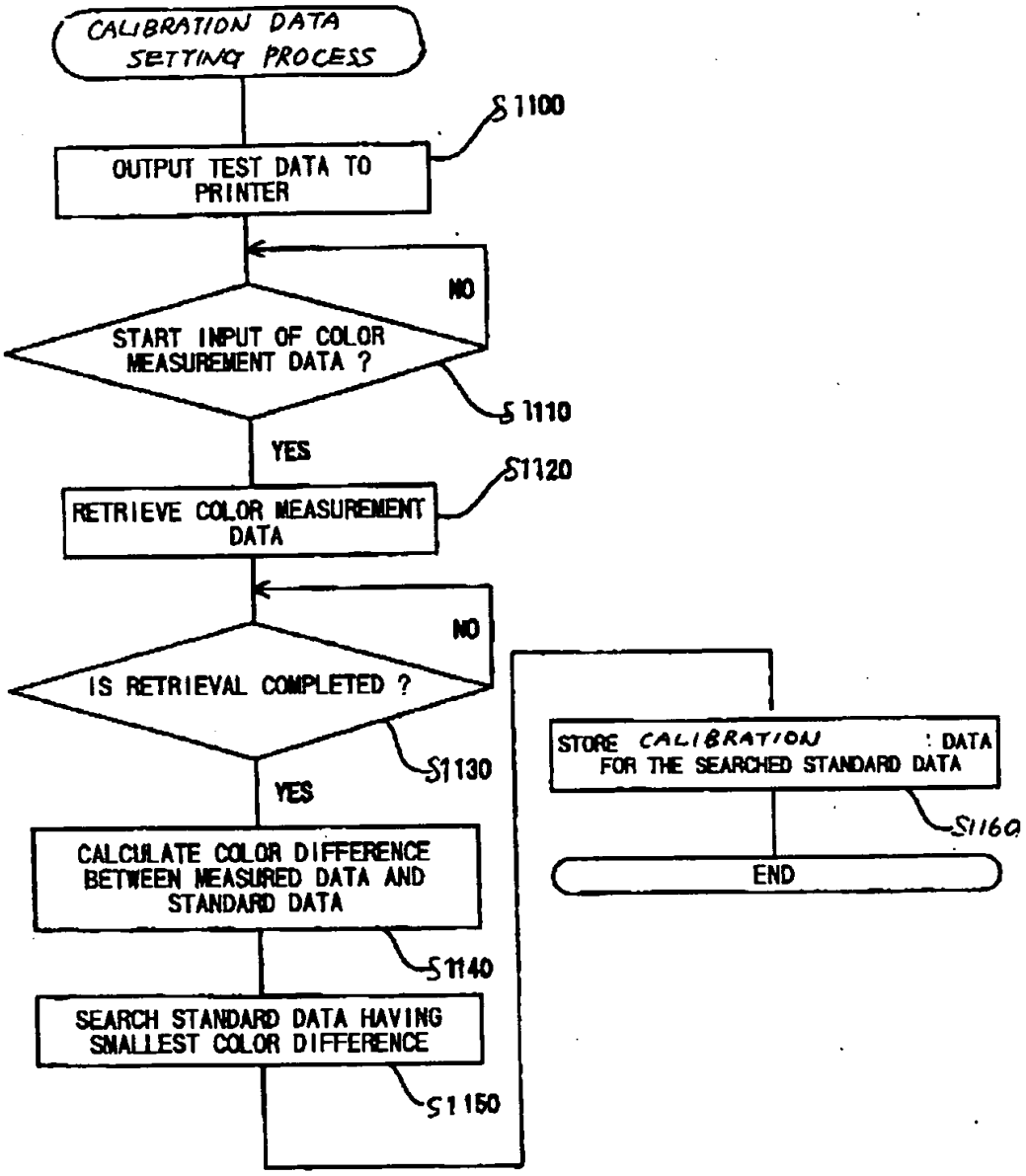

CALIBRATION DATA SETTING PROCESS
S1100
OUTPUT TEST DATA TO PRINTER
NO
START INPUT OF COLOR MEASUREMENT DATA ?
S1110
YES
S1120
RETRIEVE COLOR MEASUREMENT DATA
NO
IS RETRIEVAL COMPLETED ?
S1130
YES
CALCULATE COLOR DIFFERENCE BETWEEN MEASURED DATA AND STANDARD DATA
S1140
SEARCH STANDARD DATA HAVING SMALLEST COLOR DIFFERENCE
S1150
STORE CALIBRATION : DATA FOR THE SEARCHED STANDARD DATA
S1160
END

FIG. 9

146

PATCH NO.	P1	P2	. . .	Pn-1	Pn
MEASURED VALUE L*	L1	L2		Ln-1	Ln
MEASURED VALUE a*	a1	a2		an-1	an
MEASURED VALUE b*	b1	b2		bn-1	bn

FIG. 10

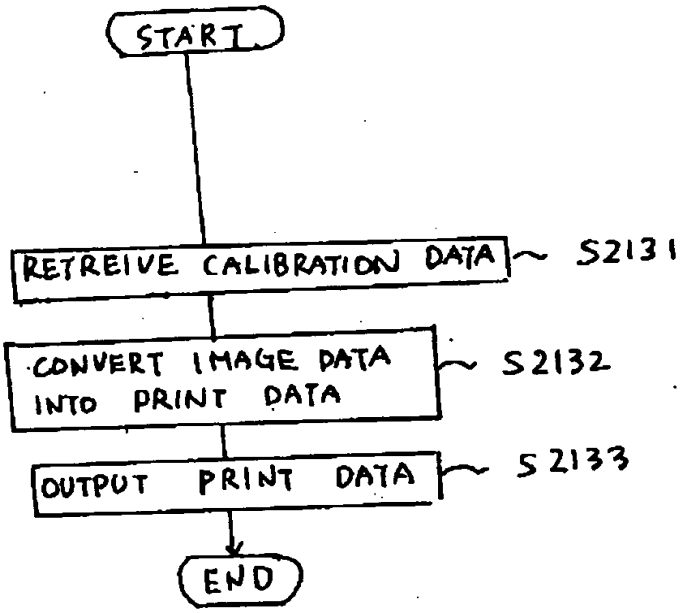

START
RETREIVE CALIBRATION DATA
S2131
CONVERT IMAGE DATA INTO PRINT DATA
S2132
OUTPUT PRINT DATA
S2133
END

FIG. 11(a)

STANDARD DATA (1) (142)

PATCH NO.	P1	..	P(n/3)	P(n/3 + 1)	..
PATCH COORDINATES (x,y) FOR COLORIMETER (1)	x1, y1	..	xn/3, yn/3	xn/3+1,yn/3+1	..
DENSITY D (D = R, G, B)	R'1	..	R'n/3	G'n/3+1	..

..	P(2n/3)	P(2n/3 + 1)	..	Pn
..	x2n/3, y2n/3	x2n/3+1, y2n/3+1	..	xn, yn
..	G'2n/3	B'2n/3+1	..	B'n

FIG. 11(b)

146

PATCH NO.	P1	..	P(n/3)	P(n/3 + 1)	..
MEASURED DENSITY D (D = R, G, B)	R1	..	Rn/3	Gn/3+1	..

..	P(2n/3)	P(2n/3 + 1)	..	Pn
..	G2n/3	B2n/3+1	..	Bn

FIG. 12

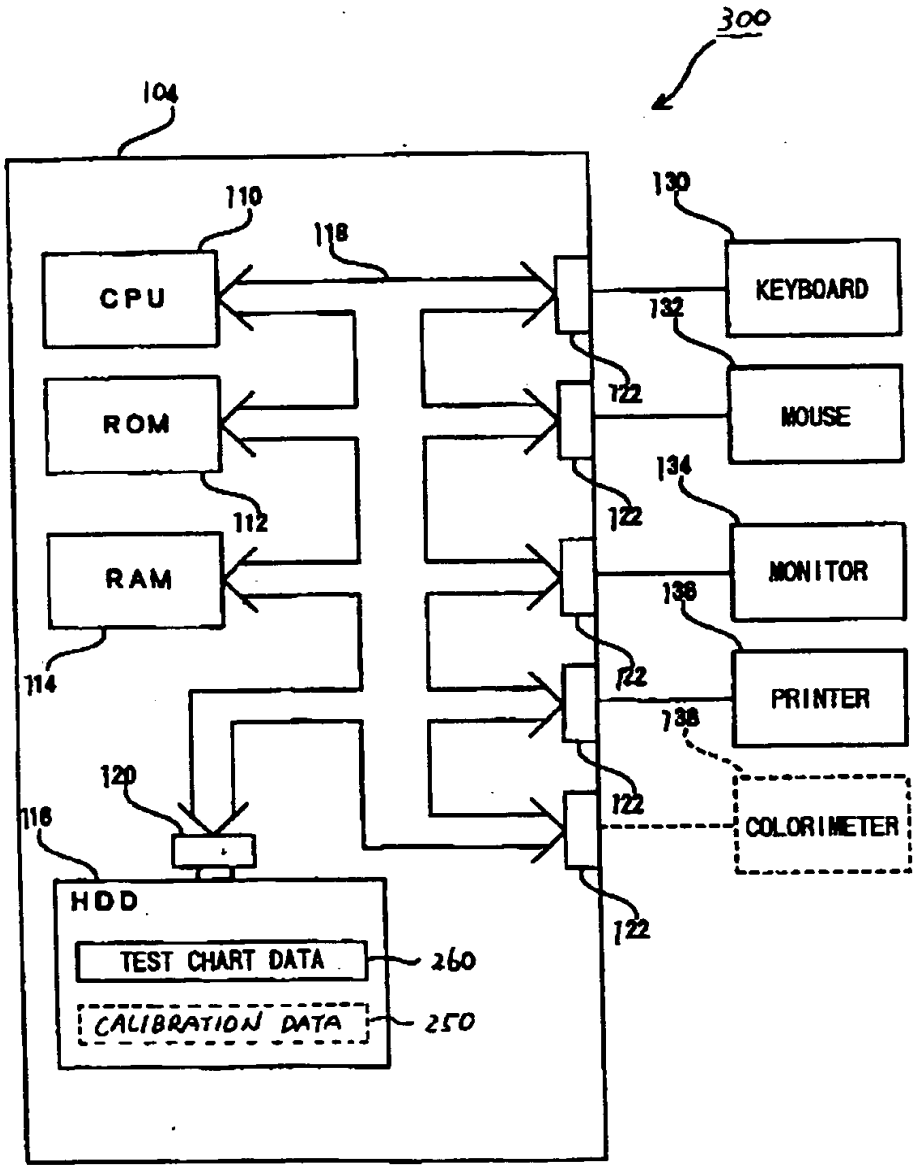

300
104
110
118
130
CPU
KEYBOARD
132
122
ROM
MOUSE
134
122
112
RAM
MONITOR
136
122
114
PRINTER
138
120
122
116
COLORIMETER
HDD
TEST CHART DATA
260
CALIBRATION DATA
250
122

FIG. 13

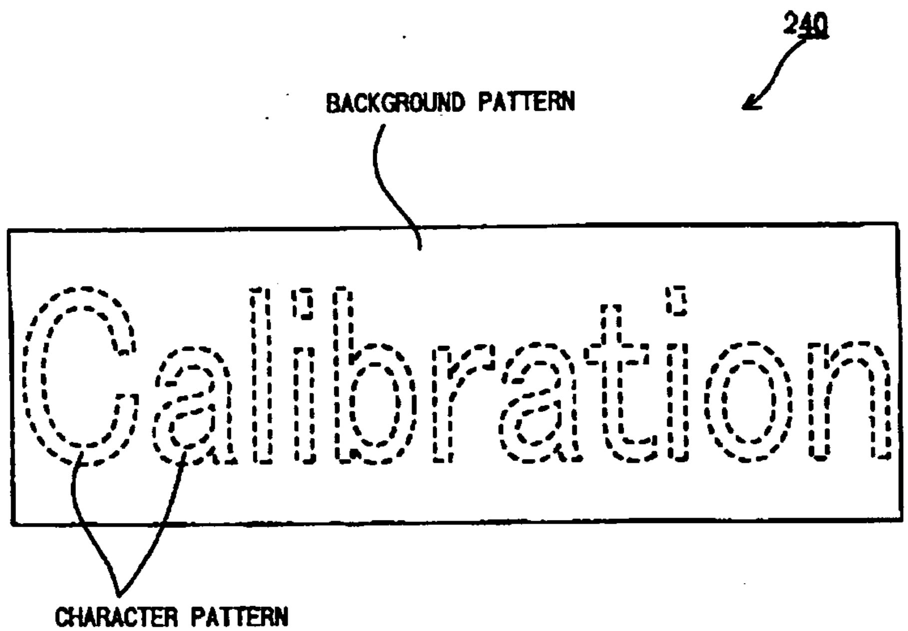
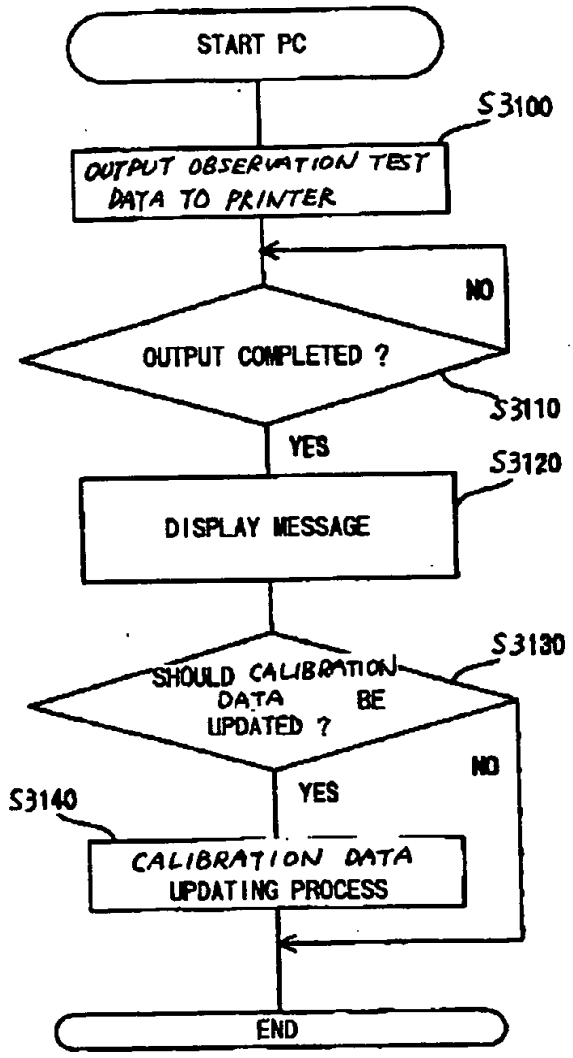


FIG. 14


START PC
S3100
OUTPUT OBSERVATION TEST DATA TO PRINTER
NO
OUTPUT COMPLETED ?
S3110
YES
S3120
DISPLAY MESSAGE
S3130
SHOULD CALIBRATION DATA BE UPDATED ?
NO
YES
S3140
CALIBRATION DATA UPDATING PROCESS
END